

§ 238.205(a), such passenger equipment also complies with the requirements of this section.

§ 238.209 Forward end structure of locomotives, including cab cars and MU locomotives.

(a)(1) The skin covering the forward-facing end of each locomotive, including a cab car and an MU locomotive, shall be:

(i) Equivalent to a ½-inch steel plate with a yield strength of 25,000 pounds-per-square-inch—material of a higher yield strength may be used to decrease the required thickness of the material provided at least an equivalent level of strength is maintained;

(ii) Designed to inhibit the entry of fluids into the occupied cab area of the equipment; and

(iii) Affixed to the collision posts or other main vertical structural members of the forward end structure so as to add to the strength of the end structure.

(2) As used in this paragraph (a), the term “skin” does not include forward-facing windows and doors.

(b) The forward end structure of a cab car or an MU locomotive may comply with the requirements of appendix F to this part in lieu of the requirements of either § 238.211 (Collision posts) or § 238.213 (Corner posts), or both, provided that the end structure is designed to protect the occupied volume for its full height, from the underframe to the anti-telescoping plate (if used) or roof rails.

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§ 238.211 Collision posts.

(a) Except as further specified in this paragraph, paragraphs (b) through (d) of this section, and § 238.209(b)—

(1) All passenger equipment placed in service for the first time on or after September 8, 2000, shall have either:

(i) Two full-height collision posts, located at approximately the one-third points laterally, at each end. Each collision post shall have an ultimate longitudinal shear strength of not less than 300,000 pounds at a point even with the top of the underframe member to which it is attached. If reinforcement is used to provide the shear value, the reinforcement shall have full

value for a distance of 18 inches up from the underframe connection and then taper to a point approximately 30 inches above the underframe connection; or

(ii) An equivalent end structure that can withstand the sum of forces that each collision post in paragraph (a)(1)(i) of this section is required to withstand. For analysis purposes, the required forces may be assumed to be evenly distributed at the end structure at the underframe joint.

(2) The requirements of this paragraph (a) do not apply to unoccupied passenger equipment operating in a passenger train, or to the rear end of a locomotive if the end is unoccupied by design.

(b) Except for a locomotive that is constructed on or after January 1, 2009, and is subject to the requirements of subpart D of part 229 of this chapter, each locomotive, including a cab car and an MU locomotive, ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, shall have at its forward end, in lieu of the structural protection described in paragraph (a) of this section, either:

(1) Two forward collision posts, located at approximately the one-third points laterally, each capable of withstanding:

(i) A 500,000-pound longitudinal force at the point even with the top of the underframe, without exceeding the ultimate strength of the joint; and

(ii) A 200,000-pound longitudinal force exerted 30 inches above the joint of the post to the underframe, without exceeding the ultimate strength; or

(2) An equivalent end structure that can withstand the sum of the forces that each collision post in paragraph (b)(1) of this section is required to withstand.

(c)(1) Each cab car and MU locomotive ordered on or after May 10, 2010, or placed in service for the first time on or after March 8, 2012, shall have at its forward end, in lieu of the structural protection described in paragraphs (a) and (b) of this section, two forward collision posts, located at approximately the one-third points laterally, meeting the requirements set